

IN THE CLAIMS:

Please ADD new claims 80-91, as follows. For the Examiner's convenience, all claims currently pending in the application are presented below:

1. (Previously Amended) A gas laser device, comprising:

a chamber for sealingly storing a laser gas therein;

a discharging electrode for exciting the laser gas through electrical discharging;

a total reflection mirror for totally reflecting laser light produced by the electrical discharging from said discharging electrode;

an output window for partially reflecting the laser light and for outputting a portion of the laser light amplified between said total reflection mirror and said output window;

51 8 a blower for circulating the laser gas within said chamber, so that the laser gas passing an electrical discharging region of said discharging electrode is circulated in said chamber and is returned to the electrical discharging region of said discharging electrode; and

13 operating means for operating said blower in accordance with a state of the electrical discharging from said discharging electrode, including first means for operating the blower rotation in a stand-by state in which no laser gas is excited by the electrical discharging from said discharging electrode and thus no laser light is emitted whereas the

17 — gas laser device is in a condition to output the laser light, and second means for operating the blower rotation in an in-operation state in which the laser gas is excited by the electrical discharging from said discharge electrode and the laser light is being outputted.

2. (Previously Amended) A gas laser device according to Claim 1, wherein said first means operates rotation of said blower when said gas laser device is in the stand-by state by stopping the blower.

3. (Previously Cancelled)

4. (Previously Amended) A gas laser device according to Claim 2, wherein said blower has a blowing blade rotatably supported within said chamber.

5. (Previously Amended) A gas laser device according to Claim 1, wherein said laser device comprises a noble gas halide excimer laser.

6. (Previously Amended) A gas laser device according to Claim 5, wherein said noble gas halide excimer laser comprises an XeCl excimer laser.

7. (Previously Amended) A gas laser device according to Claim 1, further comprising an exposure apparatus for exposing a substrate to the laser light supplied from said gas laser device.

8. (Previously Amended) A gas laser device according to Claim 7, wherein said first means operates rotation of said blower when said gas laser device is in the stand-by state by stopping the blower.

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9. (Previously Cancelled)

10. (Previously Amended) A gas laser device according to Claim 8, wherein said blower has a blowing blade rotatably supported within said chamber.

11. (Previously Amended) A gas laser device according to Claim 8, wherein said laser device comprises a noble gas halide excimer laser.

12. (Previously Amended) A gas laser device according to Claim 11, wherein said noble gas halide excimer laser comprises an XeCl excimer laser.

13. (Previously Amended) An exposure apparatus, comprising:

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a laser light source having (i) a chamber for sealingly storing a laser gas therein, (ii) a discharging electrode for exciting the laser gas through electrical discharging, (iii) a total reflection mirror for totally reflecting laser light produced by the electrical discharging from said discharging electrode, (iv) an output window for partially reflecting the laser light and for outputting a portion of the laser light reflected between said total reflection mirror and said output window, and (v) a blower for circulating the laser gas within said chamber so that the laser gas passing an electrical discharging region of said discharging electrode is circulated in said chamber and is returned to the electrical discharging region of said discharging electrode;

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a main assembly for exposing a substrate to the laser light from said laser light source; and

13 operating means for operating said blower in accordance with a state of electrical discharging of said discharging electrode including first means for operating rotation of the blower in a non-exposure-operating state in which no laser gas is excited by the electrical discharging from said discharging electrode and thus no laser light is emitted whereas the exposure device is in a condition to output the laser light, and second means 18 for operating rotation of the blower in an exposure state in which the laser gas is excited by electrical discharging from said discharging electrode and the laser light is being outputted.

14. (Previously Amended) An apparatus according to Claim 13, wherein said operating means further comprises means for increasing a rotation speed of said blower in response to a start of an exposure job in which the exposure operation is performed through said main assembly.

15. (Previously Amended) An apparatus according to Claim 14, wherein said operating means stops the revolution of said blower before a start of the exposure job.

16. (Previously Cancelled)

17. (Previously Amended) An apparatus according to Claim 15, wherein said blower has a blowing blade rotatably supported within said chamber.

18. (Previously Amended) An apparatus according to Claim 13, wherein said laser light source comprises a noble gas halide excimer laser.

19. (Previously Amended) An apparatus according to Claim 18, wherein said noble gas halide excimer laser comprises an XeCl excimer laser.

20. (Previously Amended) A semiconductor device manufacturing method comprising:

sealingly storing a laser gas in a chamber;

exciting, using a discharging electrode, the laser gas through electrical discharge;

totally reflecting laser light produced by the electrical discharging from said discharging electrode by a total reflection mirror;

partially reflecting the laser light by an output window and outputting a portion of the laser light reflected between said total reflection mirror and said output window;

circulating, using a blower, the laser gas within the chamber, so that the laser gas passing an electrical discharging region of the discharging electrode is circulated in the chamber and is returned to the electrical discharging region of the discharging electrode; and

operating rotation of the blower in accordance with a state of electrical discharging from said discharging electrode including operating rotation of the blower in a stand-by state in which no laser gas is excited by the electrical discharging from said discharging electrode and thus no laser light is emitted whereas the chamber is in a condition to output the laser light, and differently operating rotation of the blower in an in-operation state in which the laser gas is excited by the electrical discharging from said discharge electrode and the laser light is being outputted.

21. (Previously Added) A gas laser device according to Claim 1, wherein said laser device comprises an F₂ laser.

22. (Previously Added) A gas laser device according to Claim 5, wherein said noble gas halide excimer laser comprises a KrF excimer laser.

23. (Previously Added) A gas laser device according to Claim 5, wherein said noble gas halide excimer laser comprises an ArF excimer laser.

24. (Previously Added) A gas laser device according to Claim 8, wherein said laser device comprises an F₂ laser.

25. (Previously Added) A gas laser device according to Claim 11, wherein said noble gas halide excimer laser comprises a KrF excimer laser.

26. (Previously Added) A gas laser device according to Claim 11, wherein said noble gas halide excimer laser comprises an ArF excimer laser.

27. (Previously Added) An apparatus according to Claim 13, wherein said laser light source comprises an F₂ laser.

28. (Previously Added) An apparatus according to Claim 18, wherein said noble gas halide excimer laser comprises a KrF excimer laser.

29. (Previously Added) An apparatus according to Claim 18, wherein said noble gas halide excimer laser comprises an ArF excimer laser.

30 - 65. (Previously Cancelled).

66. (Previously Added) A gas laser device, comprising:

an exciting region to which a laser gas is supplied;

exciting means for exciting a laser gas;

laser gas supplying means for supplying a laser gas to said exciting region; and

control means for controlling operation states of said laser gas supplying means

and said exciting means, for providing laser gas excitement and laser gas non-excitement.

67. (Previously Added) A laser gas device according to Claim 66, wherein said laser gas supplying means includes a blower.

68. (Previously Added) A laser gas device according to Claim 67, wherein said control means controls a number of revolutions of said blower.

69. (Previously Added) A laser gas device according to Claim 66, wherein said exciting means includes two discharging electrodes disposed to sandwich said exciting region therebetween.

70. (Previously Added) A laser gas device according to Claim 69, wherein said exciting means further includes a resonator.

71. (Previously Added) A laser gas device according to Claim 70, wherein said resonator comprises a pair of mirrors.

72. (Previously Added) A laser gas device according to Claim 71, wherein said pair of mirrors includes a total reflection mirror.

73. (Previously Added) An exposure apparatus, comprising:

5' control
a gas laser device including (i) an exciting region to which a laser gas is to be supplied, (ii) exciting means for exciting a laser gas, and (iii) laser gas supplying means for supplying a laser gas to said exciting region; and

control means for controlling operation states of said laser gas supplying means and said exciting means for providing laser gas excitement and laser gas non-excitement.

74. (Previously Added) An apparatus according to Claim 73, wherein said laser gas supplying means includes a blower.

75. (Previously Added) An apparatus according to Claim 74, wherein said control means controls a number of revolutions of said blower.

76. (Previously Added) An apparatus according to Claim 73, wherein said exciting means includes two discharging electrodes disposed to sandwich said exciting region therebetween.

77. (Previously Added) An apparatus according to Claim 76, wherein said exciting means further includes a resonator.

78. (Previously Added) An apparatus according to Claim 77, wherein said resonator comprises a pair of mirrors.

79. (Previously Added) An apparatus according to Claim 78, wherein said pair of mirrors includes a total reflection mirror.

80. (New) A gas laser device comprising:

a chamber for sealingly storing a laser gas therein;

a discharging electrode for exciting the laser gas through electrical discharge;

a total reflection mirror for amplifying laser light produced by the electrical discharging from said discharging electrode;

an output window for amplifying the laser light and for outputting a portion of the laser light amplified between said total reflection mirror and said output window;

circulation means for circulating the laser gas within said chamber, so that the laser gas passing an electrical discharging region of said discharging electrode is circulated

in said chamber and is returned to the electrical discharging region of said discharging electrode; and

2 control means adapted to control said circulation means in accordance with a state of the electrical discharging from said discharging electrode so as to provide a first gas circulation capacity in a stand-by state in which no laser gas is excited by the electrical discharge from said discharging electrode and thus no laser light is emitted whereas an output of the laser light is being prepared, and a second gas circulation capacity in an in-operation state in which the laser gas is excited by the electrical discharge from said discharging electrode and the laser light is being outputted.

81. (New) A gas laser device according to Claim 80, wherein said control means is operable to cause gas circulation by said circulation means to stop when said gas laser device is in the stand-by state.

82. (New) A gas laser device according to Claim 80, wherein said circulation means includes a blower provided within said chamber.

83. (New) A gas laser device according to Claim 82, wherein said blower has a blower blade rotatably supported within said chamber.

84. (New) A gas laser device according to Claim 80, wherein said gas laser device comprises one of a noble gas halide excimer laser and an F₂ laser.

85. (New) A gas laser device according to Claim 84, wherein said noble gas halide excimer laser comprises one of an XeCl excimer laser, a KrF excimer laser, and an ArF excimer laser.

86. (New) An exposure apparatus comprising:

a gas laser device according to Claim 80;

a main assembly for exposing a substrate with laser light from said gas laser device; and

Control means operable to control the gas circulation capacity of the circulation means of the gas laser device to provide a first gas circulation capacity in an exposure-operation state of the exposure apparatus, and a second gas circulation capacity in a non-exposure-operation state of said exposure apparatus.

87. (New) An apparatus according to Claim 86, wherein said control means is operable to increase the gas circulation capacity of said circulation means in response to a start of exposure job signal in which the exposure operation is performed through said main assembly.

88. (New) An apparatus according to Claim 87, wherein said control means is operable to stop said circulation means before the start of the exposure job signal.

89. (New) An apparatus according to Claim 88, wherein said circulation means includes a blower provided within said chamber.

90. (New) An apparatus according to Claim 89, wherein said blower has a blower blade rotatably supported within said chamber.

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91. (New) A semiconductor device manufacturing method comprising:

lithographically transferring a pattern onto a substrate by use of an exposure apparatus according to Claim 86; and

manufacturing a semiconductor device from the patterned substrate.
